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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/729,682

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Ezzeddine Hilal

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04/17/2006

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EXAMINER

TAKAOKA, DEAN O

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/729,682

Applicant(s)

HILAL ET AL.

Examiner

Dean O. Takaoka

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2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-20 is/are allowed.
- 6) ☒ Claim(s) 5-15 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 3, 7 and 12 – 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ojha et al. (Reduced Size RF Coupler Design for Specialized Load Requirements), Applicant's prior art cited in the IDS dated December 5, 2003.

Claims 1, 8 and 9:

Ojha et al. (Fig. 2) shows a directional distributed coupler (inherent comprising an isolated port to ground) comprising a first conductive line carrying a main signal between two end terminals (ports 2 and 3; where the input signal may be applied to any port other than the grounded port); a second conductive line (between ports 1 and ground) coupled to the first conductive line, between which flows a sampled signal proportional to the main signal (coupled signal inherently proportional), the second conductive line coupled to the first conductive line such that the first terminal (port 1) provides a first signal that is a function of magnitude of the main signal flowing in a first direction and the second terminal provides a second signal that is a function of magnitude of the main signal flowing in a second direction on the first conductive line (inherent where the structure is a directional coupler with the coupled line comprising an isolated or grounded port, thus the direction of the coupled signal opposite to the direct

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or thru signal of the main line) and two capacitors (both labeled  $C = 6.3\text{pf}$ ) respectively connecting the two terminals of each of the lines.

Claim 2:

Where the lines have a same length ( $L = 255$ ).

Claim 3:

Where the capacitors have the same value ( $C = 6.3\text{pf}$ ).

Claims 7 and 12:

Where the first capacitor has a value ranging from 0.1 to 10pf (6.3pf).

Claim 13:

Where the directional coupler has a directivity of at least 28db (Fig. 5a showing 35db).

Claim 14:

Where the directional coupler has a central frequency between tens of MHz and tens of GHz (Fig. 5a showing 0.9 – 1.1GHz).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ojha in view of Podell et al. (US Patent No. 4,937,541).

Ojha teaches the directional coupler above but does not teach parallel sections being interleaved.

Podell et al. teaches a similar four port coupler with corresponding capacitors and further comprising interleaved parallel sections.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the coupler disclosed by Ojha with the interleaved electrodes disclosed by Podell et al. Such a modification would have been obvious where Lange couplers are well-known in the art and where Podell et al. additionally provides improved return loss and isolation thus suggesting the obviousness of the modification.

Claims 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ojha in view of Shumovich (US Patent No. 6,825,738).

Ojha teaches the directional coupler above but does not teach the second conductive line connected to a control circuit, the control circuit connected to an amplifier that supplies a signal to the first terminal or where the second terminal is coupled to an antenna.

Shumovich shows a similar directional coupler comprising the second conductive line connected to a control circuit, the control circuit connected to an amplifier that supplies a signal to the first terminal or where the second terminal is coupled to an antenna.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the coupler disclosed by Ojha with the coupler

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disclosed by Shumovich. Such a modification would have been obvious where Ojha merely shows the coupler device where Shumovich shows a specific application of the coupler such as a power monitoring application providing the advantage of a coupler of reduced size as used in the specific application thus suggesting the obviousness of the modification.

### ***Allowable Subject Matter***

Claims 16 – 20 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Ojha, Shumovich nor the prior art of record teaches or suggests the first conductive line sized in a  $\lambda/4$  central band frequency greater than a frequency band for which the coupler is intended.

Claims 4 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O. Takaoka whose telephone number is (571) 272-1772. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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April 12, 2006